Balance, Posture and Movement

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FunctionalMovement.com
Balance  Posture  Movement
It’s all **Motor Control**

**Motor Control:**

*Necessary input, Sufficiently processed, with an acceptable output*
It’s all Motor Control

1. Necessary Input – stimulus and sensation
2. Sufficient Processing – perception and planning
3. Acceptable Output – action (reflex – reaction)
1. Necessary Input

Sensation is required

What are obvious factors that can impair sensation and/or distort input?

**Numbness/nerve conduction issues** — medical problem
**Pain** — medical problem
**Stiffness** — mobility problem
1. Necessary Input

Sufficient mobility is a requirement for the necessary input for Motor Control . . .

*Stiffness lowers input*

*That’s why the FMS has a mobility bias*
2. Sufficient Processing

How do you test for sufficient processing?

Testing dysfunctional processing ability is a low percentage play . . . without a medical history that tells you otherwise (disabled).
2. Sufficient Processing

How do you test for sufficient processing?

This is where compensation lives – whether it is necessary or no longer necessary.
2. Sufficient Processing

How do you test for sufficient processing?

Manage *compensation* by finding the developmental level where it is not necessary.
2. Sufficient Processing

Simple to complex motor control requirements within the FMS help you find that developmental level.
3. Acceptable Output

Minimum movement pattern function without pain.

Movement Literacy: *The ability to read and write basic movement patterns that allow interaction with the environment and adaptation to environmental demands.*
3. Acceptable Output

If you agree on the three basic criteria for Motor Control, which is the easiest to check?

- [ ] Input
- [ ] Processing
- [x] Output - Movement Literacy
To determine if we should investigate a Motor Control problem, we must look at Input and Processing.

It’s either:

- A mobility problem . . . or
- A motor control problem
3. Acceptable Output

Don’t think total score!

**Functional movement** (FMS 2s and 3s only)
- basic Motor Control – move to fitness and performance testing

**Dysfunctional movement** (FMS 1)
- correction – focus on mobility and stability issues within ‘1’ pattern

**Movement health problem** (FMS 0)
- assess for diagnosis in the ‘0’ pattern
Dysfunctional Movement

1/1 Leg Raise

1/1 Shoulder Mobility

2s on everything else

Think Mobility!
Refine the Mobility Problem

If mobility is determined to be good through the first FMS correctives or ROM measurements . . .

Consider it a processing problem . . .

In the industry, we call this a stability problem
Dysfunctional Movement

3/3 Leg Raise

3/3 Shoulder Mobility

2s on everything else

Think Motor Control!
Refine the Stability (Motor Control) Problems

Common causes of compensation and poor processing:

1. Sedentary / Deconditioned state, but otherwise normal
2. Previous injury / Instability / Structural deformity
3. Predisposition to Hypermobility

For each of these, knowledge of history is important
Refine the Stability (Motor Control) Problems

1. Sedentary / Deconditioned state, but otherwise normal
   *Should respond quickly to corrective programming.*

2. Previous injury / Instability / Structural deformity
   *Specific (one joint). May not respond quickly.*

3. Predisposition to Hypermobility
   *May not respond quickly.*
Refine the Stability (Motor Control) Problems

2. Previous injury / Instability / Structural deformity

*Refer to healthcare provider*
3. Predisposition to Hypermobility

You can test using the Beighton Criteria and Brighton Criteria

+ Joint pain
+ Frequent dislocations (among other criteria)
Beighton Test

**One point** if you can place your palms on the ground while standing with your legs straight.
Beighton Test

One point for each elbow that bends backwards
Beighton Test

One point for each knee that bends backwards
Beighton Test

**One point** for each thumb that touches the forearm when bent backwards
Beighton Test

**One point** for each little finger that bends backwards 90 degrees or beyond
Beighton Test

What’s your score?

score of four or more (either now or in the past) and/or joint pain for longer than three months in four or more joints?

You may be hypermobile. . .
Hypermobility

If you are in this category, you demonstrate good basic function on the **FMS**, however your hypermobility may complicate exercise progress with load and impact.

The **Y Balance Test** will tell you if your extra mobility has created a Motor Control problem.
Thoroughly-researched, user-friendly Motor Control test

Demonstrates functional symmetry

Quarters the body and looks at core and extremity function under bodyweight loads
YBT Lower Quarter (YBT-LQ)

Maintain single-limb stance while reaching as far as possible with the contralateral leg. Measurement is body-relative.

Anterior  Posteromedial  Posterolateral
YBT Upper Quarter (YBT-UQ)

From push-up position, reach in the medial, inferolateral and superolateral directions. Measurement is body-relative.
1. Sedentary / Deconditioned state, but otherwise normal
   Should respond quickly to corrective programming.
2. Previous injury / Dislocation / Structural deformity
   Specific (one joint). May not respond quickly.
3. Predisposition to Hypermobility
   May not respond quickly.
With the FMS, we’ve been looking at **Movement Health:**

- Having sufficient structure and function to not require medical treatment.
- *Potential Function*

**Symmetrical 2s and 3s represent Movement Function:**

- The ability to survive and develop in a given environment
- *Demonstrated Function*

The YBT demonstrates **Motor Control** and **Functional Symmetry**

- *We feel it is the linchpin between functional movement and fundamental performance*
From this foundation of Movement Health, Movement Function, and Movement Symmetry, we can look at **Fundamental Capacity:**

- Irreducible physical qualities that are not sport/activity-specific and are possessed at a young age.
- By mapping these qualities, issues can be addressed prior to optimizing specific skill development.
Functional Movement expressed in four fundamental capacities

- climb
- carry
- run
- jump

FunctionalMovement.com
Functional Movement expressed in four fundamental capacities
Using these principles, the **Fundamental Capacity Screen** will consider four irreducible movement capacities:

- **Movement Control** (Motor Control)
- **Postural Control** (Integrity)
- **Explosive Control** (Power)
- **Impact Control** (Efficiency)

*Are these capacities part of our DNA?*
Movement Control

• The ability to manage postures and patterns vital to successful adaptation to the environment,

• In the developmental model, we look at the infant’s ability to **crawl and climb**.

• These forms of advancement are based on **single-limb competency**.
Movement Control

Motor Control Screen

• Determines motor control capacity of bodyweight with minimal/no use of stored, kinetic energy
• Based on research behind Y Balance Test (LQ and UQ)
Postural Control

• The ability to manage postures and patterns with force to support loads over distances required by the environment,
• Developing toddlers have a strong desire to carry things that they value,
• Lifts can be looked at as the beginning and end of the carry pattern,
• In survival situations, there is more carrying than lifting,
• We must be able to maintain integrity under load before we can move under load. (brake analogy)
Postural Control

 Carry Screen

• Used as a biomarker for heavy carry work capacity
• Determine if the individual can maintain alignment with integrity under load to allow maximum adaptability.
Explosive Control

• A fundamental expression of human motor control and work expressed within time constraints,

• First expressed when a toddler confronts the constraints of gravity = constant feedback,

• Jumping is a natural exploration of this power.
Explosive Control

Jump Screen

• Broad jump (with and w/o arms) as a biomarker for power capacity
• Determine if the individual minimum level of power with bodyweight to allow maximum adaptability.
Impact Control

• This is **Energy Storing** or **Recycled Energy**, 

• Power recycled for efficiency, 

• In running, hopping and skipping, toddlers naturally learn to store some of the energy expressed through their power, 

• They intuitively learn to recycle a portion of that energy.
Impact Control

Hop Screen

• Single Hop and Triple Hop as biomarkers for energy-storing capacity
• Determine if the individual is able to use stored kinetic energy and the CNS to create a maximal return on energy, enabling maximum adaptability.
Movement Control
Postural Control
Explosive Control
Impact Control
Functional Movement screened in four fundamental capacities:

- climb
- carry
- run
- jump
Functional Movement screened in four fundamental capacities
Movement Compass

• When screens have been performed, results can be plotted using the movement qualities as the four points,

• It becomes easy to see a deficiency in a particular movement quality and focus programming accordingly

• Is there a sufficient base for the desired skill?
Movement Compass

• Using data from individuals we can plot the movement qualities for specific groups, sports and occupations,

• Does your plot match the **minimum required resources** for the group you wish to be in?

• Meeting minimums is more important than single superlatives.
Movement Compass – Skill Training Implications

• Fundamental Movement Capacities are raw physical resources that an individual draws from,

• Athletic or performance skill demonstrates an individual’s resourcefulness with those resources.

• Demonstrates if sport-specific training is advantageous over general training
SPECIFIC SKILL TESTING

FUNDAMENTAL CAPACITY SCREEN

FUNCTIONAL MOVEMENT SCREEN